

Amendments to the Claims

The listing of claims will replace the previous version, and the listing of claims:

Listing of Claims

1. (Currently amended) A production method of an oxynitride powder, comprising the step of:

applying a heat treatment in a reducing and nitriding atmosphere, to a precursor compound including at least constituent elements M, Si, Al, and O (where M is one element or mixed two or more elements selected from Li, Mg, Ca, Sr, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu), thereby decreasing an oxygen content and increasing a nitrogen content of the precursor,

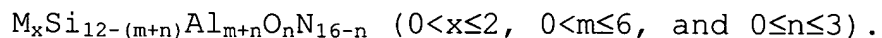
wherein the precursor compound is a mixture of: a compound SiX which turns into silicon dioxide, silicon oxynitride, or silicon nitride, by heating; a compound MX which turns into oxide, oxynitride, or nitride of M by heating; and a compound AlX which turns into aluminum oxide, aluminum oxynitride, or aluminum nitride, by heating, and

wherein the SiX has an averaged particle size of 2 μ m or less precursor compound is a compound obtained by applying a heat treatment to a complex citrate to thereby decompose and eliminate citric acid therefrom, the complex citrate being obtained by dispersing the SiX in an aqueous solution including the MX and AlX dissolved therein, followed by addition of citric acid and by drying and dehydration.

2. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the precursor compound includes nitrogen (N) therein.

3. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the method further comprises the step of:

applying a heat treatment in a reducing and nitriding atmosphere, to the precursor compound, thereby decreasing an oxygen content and increasing a nitrogen content of the precursor, to produce an α -sialon represented by a general formula



4. (Canceled)

5. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the SiX is one compound or mixed two or more compounds selected from silicon dioxide (SiO_2), silicon oxynitride (Si_2N_2O), and silicon nitride (Si_3N_4).

6. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the MX is one compound or mixed two or more compounds selected from oxide, hydroxide, alkoxide, carbonate, nitrate, and chloride, of M.

7. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the AlX is one compound or mixed two or

more compounds selected from oxide, hydroxide, alkoxide, carbonate, nitrate, and chloride, of aluminum.

8. (Previously presented) A production method of an oxynitride powder, comprising the step of:

applying a heat treatment in a reducing and nitriding atmosphere, to a precursor compound including at least constituent elements M, Si, Al, and O (where M is one element or mixed two or more elements selected from Li, Mg, Ca, Sr, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu), thereby decreasing an oxygen content and increasing a nitrogen content of the precursor,

wherein the precursor compound is a mixture of: a compound SiX which turns into silicon dioxide, silicon oxynitride, or silicon nitride, by heating; a compound MX which turns into oxide, oxynitride, or nitride of M by heating; and a compound AlX which turns into aluminum oxide, aluminum oxynitride, or aluminum nitride, by heating, and

wherein MX particles and AlX particles have averaged particle sizes smaller than that of SiX particles, respectively.

9. (Canceled)

10. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the MX and AlX are attached to a surface of the SiX.

11. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the precursor compound is a mixture obtained by dispersing SiX particles in a solution including the MX and AlX dissolved therein followed by drying and desolvation, the mixture being in a form where compounds of the M and Al are attached to a surface of a SiX particle.

12. (Previously presented) A production method of an oxynitride powder, comprising the step of:

applying a heat treatment in a reducing and nitriding atmosphere, to a precursor compound including at least constituent elements M, Si, Al, and O (where M is one element or mixed two or more elements selected from Li, Mg, Ca, Sr, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu), thereby decreasing an oxygen content and increasing a nitrogen content of the precursor,

wherein the precursor compound is a mixture of: a compound SiX which turns into silicon dioxide, silicon oxynitride, or silicon nitride, by heating; a compound MX which turns into oxide, oxynitride, or nitride of M by heating; and a compound AlX which turns into aluminum oxide, aluminum oxynitride, or aluminum nitride, by heating, and

wherein the precursor compound is a complex citrate obtained by dispersing the SiX in an aqueous solution including the MX and AlX dissolved therein, followed by addition of citric acid and by drying and dehydration.

13. (Canceled)

14. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the reducing and nitriding atmosphere includes at least an ammonia gas.

15. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the reducing and nitriding atmosphere is a mixed gas atmosphere of ammonia and hydrocarbon gas.

16. (Previously presented) The production method of an oxynitride powder of claim 15, wherein the hydrocarbon gas is a methane or propane gas.

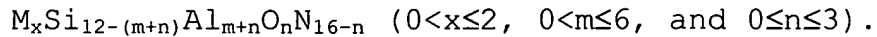
17. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the M includes at least Ca.

18. (Previously presented) The production method of an oxynitride powder of claim 1, wherein the M includes at least Eu.

19. (Previously presented) The production method of an oxynitride powder of claim 1, further comprising the step of:

adding, into the precursor compound, one reaction accelerator or mixed two or more reaction accelerators selected from fluoride, chloride, sulfate, phosphate, and borate of an element selected from calcium, potassium, and aluminum, followed by a heat treatment in a reducing and nitriding atmosphere, thereby decreasing an

oxygen content and increasing a nitrogen content of the precursor, to produce an α -sialon represented by a general formula



20. (Previously presented) An oxynitride powder, wherein the oxynitride powder is an α -sialon powder produced by the method of claim 1, and

the α -sialon powder is represented by $Ca_{x1}Eu_{x2}Si_{12-(m+n)}Al_{m+n}O_nN_{16-n}$ while fully satisfying conditions of:

$$0.4 \leq x_1 \leq 1.5,$$

$$0.01 \leq x_2 \leq 0.4,$$

$$0.8 \leq m \leq 3, \text{ and}$$

$$0 \leq n \leq 2.$$

21. (New) The production method of an oxynitride powder of claim 1, wherein the SiX has an averaged particle size of $2\mu m$ or less.